

REMARKS/ARGUMENTS

Reconsideration of the present application is respectfully requested. Since the present response raises no new issues for consideration and, in any event, places the present application in better condition for consideration on appeal, it is respectfully requested that this response be entered under 37 CFR 1.116 in response to the last Office Action dated April 29, 2004, which made final rejections as to the pending claims.

A. STATUS OF THE CLAIMS

Claims 1 and 3-21 are presented in the case for continued prosecution. Claims 11-18 have been withdrawn from consideration. No claim amendments have been made at this time.

B. THE INVENTION

The present invention, as defined by the claims, includes a cellulose ester film containing particles in an amount of from 0.0001 to 0.3% by weight and a compound represented by formula (1) in an amount of from 1 to 30% by weight.

It has become increasingly desirable to decrease the thickness and weight of a polarizing plate. However, conventional attempts to decrease the thickness and weight of a polarizing plate have caused increases in moisture vapor transmittance, lowering of durability and difficulty of drying (page 1, line 6 to page 2, line 15). The cellulose ester film of the present invention advantageously provides satisfactory moisture vapor transmittance and excellent dimensional stability, even though the thickness of the film is reduced (page 12, line 18 to page 13, line 2). In addition, the particles of the cellulose ester film of the present invention function as a matting agent to give a good slip property to the film (page 34, lines 11-15).

C. REJECTION OF CLAIMS 1, 2-6, 8-10 AND 19-21 UNDER 35 U.S.C. § 103(a)

1. The claims are not obvious over Yoshida in view of Gloor and Morflex Inc.

The Examiner has rejected the subject matter of claims 1, 3-6, 8-10 and 19-21 under 35 U.S.C. § 103(a) as being unpatentable over Yoshida (US 5,806,834) in view of Gloor (US 2,412,611), as evidenced by Morflex, Inc. The Examiner has taken the position that the present invention is obvious because Gloor teaches that dicyclohexyl phthalate is equivalent to the plasticizers disclosed in Yoshida. In order to maintain a *prima facie* obviousness rejection under 35 U.S.C. §103(a), a prior art reference or a combination of references must render the claimed subject matter as a whole obvious at the time the invention was made to a person having ordinary skill in the art. Moreover, there must be some reason, suggestion or motivation found in the prior art to arrive at the claimed invention, not Applicants' disclosure, which provides the rationale for the specific combination of claim 1 herein.

Yoshida has been cited to teach a cellulose ester film containing silicon dioxide particles having a particle size of 0.001 to 1.0 µm (col. 8, lines 54-56). In addition, Yoshida has been cited to teach a cellulose ester film containing a plasticizer in an amount less than 20% by weight. Yoshida explains that the plasticizer can be a phthalate ester such as dimethyl phthalate, diethyl phthalate or dimethoxyethyl phthalate (col. 5, lines 40-48). The Examiner has recognized that Yoshida fails to teach a plasticizer that falls within formula (1) of the present invention, such as dicyclohexyl phthalate (page 3, lines 1-3 of the Office Action). The Examiner has cited Gloor, however, to contend that a dicyclohexyl phthalate plasticizer is equivalent to the above named plasticizers of Yoshida when employed in a cellulose ester film (page 3, lines 4-8 of the Office Action).

The dicyclohexyl phthalate plasticizer disclosed in Gloor, falling within the scope of formula (1) of the present invention, is superior to the other plasticizers disclosed in Yoshida and Gloor, falling outside the scope of formula (1) of the present invention. Gloor does not teach this superiority. In addition, Gloor does not teach that a cellulose ester film having a plasticizer of formula (1) exhibits excellent properties in rate of weight change, rate of dimensional change, and retardation R_0 . Rather, Gloor teaches that the only disclosed plasticizer embraced by formula (1) is equivalent to the other named plasticizers of Gloor falling outside formula (1).

Applicants respectfully submit that there is no disclosure or suggestion to select the only plasticizer of Gloor which conforms to Applicants' claimed formula (1).

2. Declaration of Mr. Shimizu shows unexpected results

A *prima facie* case of obviousness can be rebutted by a showing of unexpected results, namely, to show that the claimed invention exhibits some superior property or advantage that a person of ordinary skill in the relevant art would have found surprising or unexpected.

As apparent from Table 1 on page 69 of the Application, cellulose ester film samples having a plasticizer of formula (1) provide greatly improved results compared to cellulose ester film samples having plasticizers falling outside of formula (1). In order to further support the data in Table 1, Applicants have herein provided a Declaration of Mr. Shimizu (July 2004 Declaration), an inventor herein, to demonstrate that the cellulose ester film of the present invention having a plasticizer of formula (1) is superior to a cellulose ester film having the plasticizers of Yoshida that do not fall within formula (1). The July 2004 Declaration further demonstrates that the cellulose ester film of the present invention exhibits properties that are unexpected to one of skill in the art based on the teachings of Yoshida and Gloor.

Mr. Shimizu prepared and evaluated 9 cellulose ester film samples. Mr. Shimizu first prepared the cellulose triacetate dope composition of Example 1 of Yoshida having a triphenyl phosphate (TPP) plasticizer, except that silicon dioxide particles with an average particle size of 0.2 μm were further added to give a particle content of 0.25% by weight. The resulting dope was processed in the same manner as Example 1 of Yoshida to produce Comparative Cellulose Acetate Film Sample 2-1. Comparative Cellulose

Acetate Film Sample 2-1 has a thickness of 80 μm , contains the particles of the present invention and contains a plasticizer (TPP) that does not fall within formula (1) of the present invention.

Comparative Cellulose Acetate Film Sample 2-2 was prepared in the same manner as Comparative Cellulose Acetate Film Sample 2-1, except that dimethyl phthalate was employed as a plasticizer instead of TPP. Comparative Cellulose Acetate Film Sample 2-3 was prepared in the same manner as Comparative Cellulose Acetate Film Sample 2-1, except that diethyl phthalate was employed as a plasticizer instead of TPP. Comparative Cellulose Acetate Film Sample 2-4 was prepared in the same manner as Comparative Cellulose Acetate Film Sample 2-1, except that dimethoxyethyl phthalate was employed as a plasticizer instead of TPP. The plasticizers of Comparative Cellulose Acetate Film Samples 2-2 to 2-4 have been alleged by the Examiner to be equivalent to the dicyclohexyl phthalate plasticizer falling within formula (1) of the present invention.

Inventive Cellulose Acetate Film Sample 2-5, which falls within claim 1, was prepared in the same manner as Comparative Cellulose Acetate Film Sample 2-1, except that dicyclohexyl phthalate corresponding to exemplified compound 1-16 on page 18 of the Application was employed as a plasticizer instead of TPP. Inventive Cellulose Acetate Film Sample 2-6 was prepared in the same manner as Comparative Cellulose Acetate Film Sample 2-1, except that exemplified compound 1-12 on page 18 of the Application was employed as a plasticizer instead of TPP. Inventive Cellulose Acetate Film Sample 2-7 was prepared in the same manner as Comparative Cellulose Acetate Film Sample 2-1, except that exemplified compound 1-28 on page 19 of the Application was employed as a plasticizer instead of TPP. Inventive Cellulose Acetate Film Sample 2-8 was prepared in the same manner as Comparative Cellulose Acetate Film Sample 2-1, except that exemplified compound 1-17 on page 18 of the Application was employed as a plasticizer instead of TPP. Inventive Cellulose Acetate Film Sample 2-9 was prepared in the same manner as Comparative Cellulose Acetate Film Sample 2-1, except that exemplified compound 1-14 on page 18 of the Application was employed as a plasticizer instead of TPP. The plasticizers of Inventive Cellulose Acetate Film Samples 2-5 to 2-9 fall within formula (1) of the present invention, and Yoshida or Gloor disclose only the dicyclohexyl phthalate plasticizer of Inventive Cellulose Acetate Film Sample 2-5.

Mr. Shimizu evaluated the 9 cellulose ester film samples for moisture vapor permeability, rate of weight change, rate of dimensional change and retardation R_0 in the same manner as Example 1 of the Application. The results of these evaluations are illustrated in Table A of the July 2004 Declaration.

Table A demonstrates that Inventive Cellulose Acetate Film Samples 2-5 to 2-9 exhibit a lower moisture vapor transmittance, an excellent (lower) rate of weight change, a lower rate of dimensional change, excellent dimensional stability and a lower retardation in plane R_0 compared to Comparative Cellulose Acetate Film Samples 2-1 to 2-4.

Mr. Shimizu has therefore demonstrated that a cellulose ester film having a plasticizer of formula (1), i.e. dicyclohexyl phthalate plasticizer (Inventive Cellulose Acetate Film Sample 2-5), is superior to a cellulose ester film having the TPP (Comparative Cellulose Acetate Film Sample 2-1), dimethyl phthalate (Comparative Cellulose Acetate Film Sample 2-2), diethyl phthalate (Comparative Cellulose Acetate Film Sample 2-3) and dimethoxyethyl phthalate (Comparative Cellulose Acetate Film Sample 2-4) plasticizers of Yoshida and Gloor. It is submitted that these results are unexpected to one of skill in the art because Gloor teaches the equivalence of plasticizers whether they conform to formula (1) or not.

In addition, dicyclohexyl phthalate is the only plasticizer of Gloor that falls within Formula (1) of the present invention. Table A of the July 2004 Declaration further demonstrates that cellulose ester films having other plasticizers that fall within formula (1) (Inventive Cellulose Acetate Film Samples 2-6 to 2-9) are superior to cellulose ester films having the plasticizers of Yoshida (Comparative Cellulose Acetate Film Samples 2-1 to 2-4).

In summary, the dicyclohexyl phthalate plasticizer of Gloor is the only prior art plasticizer that falls within formula (1) of the present invention. Gloor does not teach the superiority of a plasticizer of formula (1) in terms of retardation, moisture vapor permeability and stability in dimension and weight. Rather, Gloor teaches that plasticizers of formula (1) and plasticizers outside of formula (1) are equivalent. Mr. Shimizu has demonstrated the superiority of the plasticizers of formula (1). Mr. Shimizu

has also stated that this superiority is unexpected to one of skill in the art based on the teachings of both Yoshida and Gloor.

Applicants therefore respectfully submit that claim 1, as well as claims 3-6, 8-10 and 19-21 which are ultimately dependent upon claim 1, are patentable over the teachings of Yoshida and Gloor, as evidenced by Morflex, Inc. taken alone or in combination. Reconsideration and removal of the rejections is therefore proper and requested.

D. REJECTION OF CLAIM 7 UNDER 35 U.S.C. § 103(a)

The Examiner has also rejected the subject matter of claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Yoshida in view of Gloor, as evidenced by Morflex, Inc, and further in view of Joseph (US 2,038,114).

Joseph teaches a UV absorbent for a cellulose ester film. Thus, even if one were to combine the teachings of Yoshida, Gloor, Morflex Inc. and Joseph, the combination would not teach the present invention as recited in claim 1.

E. FINALITY OF THE OFFICE ACTION

The Examiner has stated that the outstanding Office Action has been made final because Applicants' amendment necessitated the new grounds of rejection.

Applicants respectfully request that the Examiner withdraw the finality of the Office Action. The prior amendment merely further defined "Y" of formula (1) of claim 1 and added the "particles" limitation to claim 1. The definition of "Y" had been added based on claim 2. The "particles" limitation had been added based on claim 8. The only subject matter that had not been previously searched is the "0.0001 to 0.3%" weight limitation of claim 1.

MPEP 706.07 explains that prosecution should not be "prematurely cut off" if "applicant is seeking to define his or her invention in claims that will give him or her the patent protection to which he or she is justly entitled". In the prior amendment, Applicants had been seeking to further define the invention by particularly claiming the particles of the present invention to which they are justly entitled. The Examiner has responded by citing new references, Yoshida and Gloor. These newly cited references necessitated the submission of the July 2004 Declaration of Mr. Shimizu. Applicants

respectfully request that the July 2004 Declaration be entered. In addition, it would be within the spirit of the rules if prosecution were not made final, especially in light of the newly cited references. It is respectfully requested that the Examiner reconsider the finality of the outstanding Office Action.

F. FEES

This response is being filed within the shortened period for response, and within two months from the mailing date of the final action. No further fee is believed to be due. If, on the other hand, it is determined that any further fees are due or any overpayment has been made, the Assistant Commissioner is hereby authorized to debit or credit such sum to Deposit Account No. 02-2275. Pursuant to 37 C.F.R. 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time. The fee associated therewith is to be charged to Deposit Account No. 02-2275.

G. CONCLUSION

In view of the actions taken and arguments presented, it is respectfully submitted that each and every one of the matters raised by the Examiner have been addressed by the present amendment and that the present application is now in condition for allowance.

An early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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Encl: Executed Declaration of Mr. Kunio Shimizu
Return receipt post-card



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent

Application of: K. SHIMIZU

Serial Number : 10/075,362

Filed : February 14, 2002

For : CELLULOSE ESTER FILM, ITS MANUFACTURING
METHOD, POLARIZING PLATE, AND LIQUID CRYSTAL
DISPLAY

Group Art Unit: 1772

Examiner : Sow-Fun Hon

DECLARATION UNDER 37 C.F.R. 1.132

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

I, KUNIO SHIMIZU, hereby declare and say as follows:

That I am a post graduate from Hokkaido University
having been awarded a Masters Degree in Technology in March
1980.

That since April 1986, I have been employed by Konica
Corporation, the owner of the above-identified application.
During my employment, I have been engaged in the research
and the study of polarizing plate materials in the Research
and Development Laboratory of my company.

That I am a co-inventor of the present application.

That I am familiar with the subject matter of the
present invention.

What follows is an accurate summary of experiments conducted according to my detailed instructions and under my personal supervision, and the results obtained therefrom.

Comparative tests

1. Claims 1, 3-6, 8-10, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (US 5,806,834) in view of Gloor (US 2,412,611, as evidenced by Morflex, Inc. (previously cited). The Examiner states on page 3, lines 2-8 of the Office Action, "Yoshida fails to teach dicyclohexyl phthalate which has the claimed formula (1). Gloor teaches that cellulose ester (acetate) (column 1, lines 40-45) is plasticized with phthalate esters such as dimethyl phthalate, diethyl phthalate, dimethoxyethyl phthalate, and dicyclohexyl phthalate (column 8, lines 15-25), demonstrating that dicyclohexyl phthalate is equivalent to dimethyl phthalate, diethyl phthalate, and dimethoxyethyl phthalate, as a phthalate ester plasticizer for cellulose ester (acetate). Therefore, it would not have been obvious to one of ordinary skill in the art to have used dicyclohexyl phthalate in place for dimethyl phthalate, diethyl phthalate, and dimethoxyethyl phthalate in the cellulose ester (acetate) film because of its equivalence as a phthalate ester plasticizer for cellulose ester (acetate), as demonstrated by Gloor." However, "dicyclohexyl phthalate" in Gloor is the only plasticizer that reads on formula (1), and Gloor does not disclose that dicyclohexyl phthalate is superior to other plasticizers, i.e., other phthalate esters such as dimethyl phthalate, diethyl phthalate, dimethoxyethyl phthalate. Further, neither Yoshida nor Gloor discloses

that the claimed cellulose ester film, comprising a compound of formula (1), exhibits excellent retardation, excellent moisture vapor permeability, and excellent stability in dimension and weight.

Accordingly, in order to further show the unexpected results of the invention, additional tests were carried out in which a comparison was made between a cellulose ester film comprising a compound of formula (1) and a cellulose ester film comprising the other plasticizers disclosed in Yoshida and Gloor.

2. Preparation of cellulose ester film samples

i) Preparation of comparative cellulose acetate film samples

A cellulose triacetate dope composition was prepared in the same manner as in Example 1 of Yoshida, except that silicon dioxide particles with an average particle size of 0.2 μm were further added to give a particle content of 0.25% by weight in the cellulose acetate film to be prepared. The resulting dope was processed in the same manner as in Example 1 of Yoshida. Thus, cellulose acetate film sample 2-1 (comparative) was prepared. This cellulose acetate film sample 2-1 had a thickness of 80 μm , and contained TPP (triphenyl phosphate) as a plasticizer.

Cellulose acetate film sample 2-2 (comparative) was prepared in the same manner as in cellulose acetate film sample 2-1 above, except that dimethyl phthalate was used as a plasticizer instead of TPP.

Cellulose acetate film sample 2-3 (comparative) was prepared in the same manner as in cellulose acetate film sample 2-1 above, except that diethyl phthalate was used as a plasticizer instead of TPP.

Cellulose acetate film sample 2-4 (comparative) was prepared in the same manner as in cellulose acetate film sample 2-1 above, except that dimethoxyethyl phthalate was used as a plasticizer instead of TPP.

ii) Preparation of inventive cellulose acetate film samples

Cellulose acetate film sample 2-5 (inventive) was prepared in the same manner as in cellulose acetate film sample 2-1 above, except that dicyclohexyl phthalate, corresponding to exemplified compound 1-16 on page 18 of the Specification and falling within the scope of the compound as recited in claim 1, 4 or 6, was used as a plasticizer instead of TPP.

Cellulose acetate film sample 2-6 (inventive) was prepared in the same manner as in cellulose acetate film sample 2-1 above, except that exemplified compound 1-12 (see page 18 of the Specification), falling within the scope of the compound as recited in claim 3, was used as a plasticizer instead of TPP.

Cellulose acetate film sample 2-7 (inventive) was prepared in the same manner as in cellulose acetate film sample 2-1 above, except that exemplified compound 1-28 (see page 19 of the Specification), falling within the scope of the compound as recited in claim 4, was used as a plasticizer instead of TPP.

Cellulose acetate film sample 2-8 (inventive) was prepared in the same manner as in cellulose acetate film sample 2-1 above, except that exemplified compound 1-17 (see page 18 of the Specification), falling within the scope of the compound as recited in claim 5, was used as a plasticizer instead of TPP.

Cellulose acetate film sample 2-9 (inventive) was

prepared in the same manner as in cellulose acetate film sample 2-1 above, except that exemplified compound 1-14 (see page 18 of the Specification), falling within the scope of the compound as recited in claim 6, was used as a plasticizer instead of TPP.

3. The resulting samples were evaluated for moisture vapor permeability, rate of weight change, rate of dimensional change, and retardation R_0 in the same manner as in Example 1 of the present Specification. The results are shown in the following Table A.

Table A

Film sample No.	Plasticizer used	Moisture vapor transmittance (g/m ² ·24 hr)	Rate of weight change (%)	Rate of dimensional change (%)	R_0 (nm)	Remarks
2-1	TPP	205	1.4	-1.0	10	Comp.
2-2	Dimethyl phthalate	250	2.0	-1.4	10	Comp.
2-3	Diethyl phthalate	220	1.7	-1.2	9	Comp.
2-4	Dimethoxy-ethyl phthalate	210	1.5	-1.1	8	Comp.
2-5	Dicyclohexyl phthalate (Exemplified compound 1-16)	130	0.1	-0.05	0	Inv.
2-6	Exemplified compound 1-12	140	0.1	-0.05	1	Inv.
2-7	Exemplified compound 1-28	140	0.1	-0.10	1	Inv.
2-8	Exemplified compound 1-17	140	0.1	-0.05	1	Inv.
2-9	Exemplified compound 1-14	135	0.2	-0.10	2	Inv.

Inv.: Inventive, Comp.: Comparative

As is apparent from Table A above, inventive cellulose ester film samples provided good results of a low moisture vapor transmittance, an excellent (low) rate of weight change, a low rate of dimensional change, and an excellent dimensional stability, and a low retardation in plane (R_0), as compared with comparative samples. The results are unexpected to one of ordinary skill in the art, and it would not have been obvious to one of ordinary skill in the art to attain the invention over the cited references. Accordingly, we believe that instant claims 1, 3-6, 8-10, and 19-21 are in a situation of allowability.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001, of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: July 5, 2004

Kunio Shimizu
KUNIO SHIMIZU